UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
WEIDNER, TIMOTHY J

ART UNIT	PAPER NUMBER
2609	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/789,141	SAJASSI, ALI
	Examiner	Art Unit	
	Timothy Weidner	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/22/04, 6/4/07*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because the legal phraseology of the last 5 lines is implied, and should be removed. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: The brief summary of the invention is missing. See MPEP § 608.01(d). Appropriate correction is required.

Claim Objections

Claim 19 is objected to because of the following informalities: the step of adding an Ethernet header refers to "VFR," which should be "VRF" for consistency. Appropriate correction is required.

Claim 30 objected to because of the following informalities: claim is a duplicate of claim 26, and seems more properly dependent upon claim 29. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 31 and 32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Computer usable medium referred to in paragraphs 0031 and 0032 of the detailed description suggests "... propagation media ... data signals embodied in a carrier wave ..." which is a form of energy not

falling into one of the four statutory categories of invention, i.e. it is not a process,

machine, manufacture, or composition of matter.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 10, 12, 13, 15, and 17 are rejected under 35 U.S.C. 102(e) as being

anticipated by Yuan (US 2004/0095940 A1).

Regarding claims 1, 10, and 15 Yuan teaches a method of interworking between

a plurality of customer edge (CE) devices correspondingly coupled to provider edge

(PE) devices via attachment circuits (ACs), the PE devices for routing packets across a

service provider (SP) network, the CE devices including one or more Ethernet CE

devices and at least one non-Ethernet CE, the method comprising: providing a virtual

switch instance (VSI) on a first PE device coupled to the at least one non-Ethernet CE

(figure 1, item 112; paragraph 0016; "the second portion is an internet protocol

network"), the first PE device also including a virtual routing forwarding (VRF) entity

(figure 1, item 110; paragraph 0016); interfacing the VSI with the VRF entity (figure 1,

items 114, 116, 118; paragraph 0016) such that the SP network appears to offer Layer

3 virtual private network (L3VPN) service toward the at least one non-Ethernet CE

(paragraphs 0016, 0017; "perspective of the customer equipment"), and virtual private

local area network service (VPLS) toward the one or more Ethernet CE devices

(paragraphs 0016, 0018; "perspective of the customer equipment"). Further, regarding

claim 10, Yuan teaches a first tier (paragraph 0018) and a second tier (paragraph 0016)

as described above.

Regarding claims 3, 13, and 17, Yuan teaches the VSI and VRF entity comprise

separate forwarding tables (paragraphs 0019, 0020).

Regarding claim 12, Yuan teaches a service provider (SP) network providing

connectivity between the first tier PE devices (paragraph 0023).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 4, 11, 14, and 16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yuan (US 2004/0095940 A1) as applied to claims 1, 1, 10, 10, and

15 respectively above, in view of Mancour (US 7,009,983 B2).

Regarding claims 2, 11, and 16, Yuan teaches the VSI and VRF entity are

coupled (paragraph 0016), but not as a single combined entity.

Mancour, which is in the same field of endeavor, teaches a single combined

entity for storing information pertaining to VSI and VRF (column 5, lines 30-46) for the

purpose of facilitating the interworking of heterogeneous branches in a VPN utilizing a

single, centralized provider device along the emulated circuit path (column 2, lines 35-

38). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to have the VSI and VRF entity of Yuan comprise a single

combined entity to facilitate the interworking of heterogeneous branches in a VPN

utilizing a single, centralized provider device along the emulated circuit path.

Regarding claims 4 and 14, Yuan teaches the VSI and VRF entity comprise

forwarding tables for population with media access control (MAC) addresses

(paragraphs 0019-0022), but not that the MAC addresses are those of the CE devices.

Mancour teaches the MAC addresses are those of CE devices for the purpose of

providing end-to-end interconnectivity for different CE devices on different virtual circuits

(column 4, lines 29-44). It would have been obvious to one of ordinary skill in the art at

the time the invention was made to have the forwarding tables populate with MAC

addresses of Yuan of the CE devices to provide end-to-end interconnectivity for

different CE devices on different virtual circuits.

Claims 5-9, 19-21, and 23-32 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yuan (US 2004/0095940 A1) in view of Mancour (US 7,009,983 B2).

Regarding claim 5, Yuan teaches a method of providing virtual private network

(VPN) service to a customer having a plurality of sites, one or more of the sites having

Ethernet interfaces and at least one site having a non-Ethernet routed interface, each of

the sites being connected across a service provider (SP) network via a corresponding

provider edge (PE) device, the method comprising: providing a logical entity of a PE

device connected to the at least one site (figure 1, items 110, 112; paragraph 0016), the

logical entity: delivering a packet at Layer 3 to the site having the non-Ethernet routed

interface (paragraphs 0016, 0017; "the second portion is an internet protocol network ...

IP-VPN" wherein delivering packets at Layer 3 is inherent), but does not teach adding

an Ethernet header to a Layer 3 packet for transport across the SP network to a

destination site.

Mancour, which is in the same field of endeavor, teaches adding an Ethernet

header to a Layer 3 packet for transport across the SP network to a destination site

(column 5, lines 3-16) for the purpose of facilitating the interworking of heterogeneous

branches in a VPN utilizing a single, centralized provider device along the emulated

circuit path (column 2, lines 35-38). It would have been obvious to one of ordinary skill

in the art at the time the invention was made to, in addition to the method taught by

Yuan, add an Ethernet header to a Layer 3 packet for transport across the SP network

to a destination site to facilitate the interworking of heterogeneous branches in a VPN

utilizing a single, centralized provider device along the emulated circuit path.

Regarding claims 6 and 7, Yuan teaches the site and the PE device, but not the interconnection via asynchronous transfer mode (ATM) or frame relay (FR) type of attachment circuit.

Mancour teaches the site is connected to the PE device via ATM or FR type of attachment circuit (column 1, lines 38-49; column 7, lines 13-37) for the purpose of later initiating an IARP or INATMARP message. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the site connected to the PE device of Yuan via an ATM or FR type of attachment circuit to later initiate an IARP or INATMARP message.

Regarding claim 8 and 21, Yuan teaches the logical entity comprises separate virtual switch instance (VSI) and virtual routing forwarding (VRF) tables (paragraphs 0019, 0020).

Regarding claims 9 and 20, Yuan teaches the logical entity comprises coupled VSI and VRF and that each has tables (paragraphs 0016, 0019, 0020), but not as a single combined table.

Mancour teaches a single combined entity for storing information pertaining to VSI and VRF (column 5, lines 30-46) for the purpose of facilitating the interworking of heterogeneous branches in a VPN utilizing a single, centralized provider device along the emulated circuit path (column 2, lines 35-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the VSI and VRF tables of Yuan comprise a single combined table to facilitate the interworking of

heterogeneous branches in a VPN utilizing a single, centralized provider device along the emulated circuit path.

Regarding claims 19, 23, 27, and 31, Yuan teaches a provider edge (PE) device for association with a customer edge (CE) device having a non-Ethernet routed interface (paragraph 0016), comprising: a virtual switch instance (VSI) for connection to a service provider (SP) network (figure 1, item 110), the VSI providing an Ethernet-compatible interface to the SP network (paragraph 0016); a virtual routing forwarding (VRF) entity (figure 1, item 112) configured with the VSI to deliver Layer 3 virtual private network (L3VPN) compatible packets from across the SP network to the CE (paragraphs 0016, 0017); and further teaches IP to MAC mapping is performed at the virtual router instance (paragraph 0021; VRI same as VRF), but does not teach adding an Ethernet header to packets sent by the CE for transport across the SP network to a destination customer site.

Mancour teaches adding an Ethernet header to packets sent by the CE for transport across the SP network to a destination customer site (column 5, lines 3-16) for the purpose of facilitating the interworking of heterogeneous branches in a VPN utilizing a single, centralized provider device along the emulated circuit path (column 2, lines 35-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to, in addition to that taught by Yuan, add an Ethernet header to packets sent by the CE for transport across the SP network to a destination customer site to facilitate the interworking of heterogeneous branches in a VPN utilizing a single, centralized provider device along the emulated circuit path.

Regarding claims 24, 25, 28, and 29, the rejections regarding claims 23, 23, 27, and 27 respectively apply.

Regarding claims 26 and 30, Yuan teaches the VRF entity comprises one forwarding table (paragraph 0020), as in the instant invention alternative.

Regarding claim 32, Yuan teaches the PE device to provide virtual private local area network service (VPLS) functionality for the CE device (paragraph 0018).

Claims 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuan (US 2004/0095940 A1) as applied to claims 10 and 15 respectively above, in view of Ould-Brahim et al (US 2003/0177221 A1).

Regarding claims 18 and 22, Yuan teaches the VRF comprises a forwarding table (paragraph 0020), but not that the VRF comprises a plurality of forwarding tables.

Ould-Brahim, which is in the same field of endeavor, teaches the VRF comprises a plurality of forwarding tables (paragraphs 0026, 0037) for the purpose of exporting them to the backbone using BGP and distributing them to the appropriate PE routers for use in routing VPN traffic through established tunnels because it is well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the VRF of Yuan comprise a plurality of forwarding tables to distribute them to appropriate PE routers.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Balay et al. (US 7,116,665 B2) teaches a distributed provider edge.

Holmgren et al. (US 7,113,512 B1) teaches Ethernet to ATM interworking.

Chen et al. (US 2006/0182037 A1) teaches provisioning MPLS/VPN networks.

Kermarec et al. (US 2003/0110268 A1) teaches a VPN service shared network.

Casey (US 2003/0142674 A1) teaches label control for VPLS networks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy Weidner whose telephone number is (571) 270-1825. The examiner can normally be reached on Monday - Friday 7:30 AM - 5:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Garber can be reached on (571) 272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TJW